CLAIMS

What Is Claimed Is:

1. A process instrument for measuring pressure of process media in a process, the instrument comprising:

a seal connection comprising a base sealed to the process and a body extending from the base to a distal end spaced apart from the base;

a pressure sensor located at the base to sense pressure of the process media and transmit a pressure signal indicative of the sensed pressure of the process media; and

a pressure gauge positioned at the distal end of the seal connection apart from the pressure sensor and adapted to receive the pressure signal.

2. The process instrument of claim 1 comprising a transmission conduit connecting the pressure sensor to the pressure gauge, wherein the pressure signal is transmitted via the transmission conduit to the pressure gauge.

3. The process instrument of claim 2 wherein the body of the seal connection defines a cavity and the transmission conduit is located in the cavity.

4. The process instrument of claim 3 wherein the cavity is devoid of fill liquid.

5. The process instrument of claim 2 wherein the pressure signal is an electrical signal and the transmission conduit comprises one or more wires.

6. The process instrument of claim 1 wherein the base is flush-sealed to the process to form an interface comprising a flush surface.

7. The process instrument of claim 6 wherein the interface is diaphragm-less between the sensor and the process.

8. The process instrument of claim 7 wherein the process sensor comprises a sensor diaphragm.

9. The process instrument of claim 1 wherein the pressure sensor comprises a sensor seal in direct contact with the process media.

10. The process instrument of claim 1 wherein the base comprises a pocket and the sensor is secured in the pocket.

11. The process instrument of claim 1 wherein the gauge is a digital gauge.

12. A diagnostic instrument for measuring a parameter of process media of a process, the instrument comprising:

a seal connection comprising:

a seal-diaphragmless base sealed to the process, and

a body extending from the base to a distal end spaced apart from the base;

a sensor located at the base to sense the process media parameter and transmit a signal indicative of the sensed parameter; and

a diagnostic-output device positioned at the distal end apart from the sensor and adapted to receive the signal indicative of the sensed parameter.

13. The instrument of claim 12 wherein the body defines a cavity and the cavity is devoid of fill liquid.

14. The instrument of claim 12 wherein the diagnostic-output device is a pressure gauge responsive to electrical signals and the signal indicative of the sensed parameter is an electrical signal.

15. A process instrument for measuring pressure of a process media of a process, the instrument comprising:

a base sealed to the process;

a body extending from the base to a distal end spaced apart from the base, wherein the body defines a cavity devoid of fill liquid;

a pressure sensor located at the base to sense pressure of the process media and transmit a signal indicative of the sensed pressure; and

a pressure gauge positioned at the distal end apart from the pressure sensor and responsive to the signal indicative of the sensed pressure.

16. The instrument of claim 15 wherein the pressure gauge is a digital pressure gauge.

17. The instrument of claim 15 comprising one or more wires connecting the pressure gauge and the pressure sensor, wherein the signal indicative of the pressure of the process media is transmitted to the pressure gauge via the one or more wires.

18. The instrument of claim 15 wherein the pressure sensor is in direct contact with the process media.

19. The instrument of claim 18 wherein the base and the pressure sensor are flush-sealed to the process.

20. The instrument of claim 19 wherein the base and the pressure sensor are sufficiently flush-sealed to eliminate substantially all clog-susceptible pockets.

21. The instrument of claim 15 wherein the pressure sensor comprises a sensor diaphragm in direct contact with the process media.

22. The instrument of claim 15 wherein the base comprises a seal diaphragm between the pressure sensor and the process media and the seal diaphragm is adjacent the pressure sensor.

23. The instrument of claim 22 wherein the pressure sensor comprises a sensor diaphragm in direct contact with seal diaphragm.

24. The instrument of claim 22 wherein the seal diaphragm is sufficiently flush-sealed to the process to substantially eliminate clog-susceptible pockets.

25. A method of measuring pressure of a process media of a process, the method comprising:

positioning a pressure gauge apart from the process media;

positioning a pressure sensor in operable communication with the process media to sense pressure changes of the process media;

positioning the pressure sensor apart from the pressure gauge; and

transmitting a pressure signal based on the sensed pressure from the pressure sensor to the pressure gauge.

26. The method of claim 25 comprising:

sealing a base of a seal connection to the process;

positioning the pressure gauge at a distal end of the seal connection;

positioning the pressure sensor at a base of the seal connection; and

maintaining a fill-liquid-free environment between the pressure sensor and the pressure gauge.

27. The method of claim 26 wherein a cavity in a body of the seal connection defines the fill-liquid-free environment; and the method comprises transmitting the pressure signal through the cavity.

28. The method of claim 27 comprising transmitting the pressure signal via one or more wires connecting the pressure gauge and the pressure sensor.

29. The method of claim 26 comprising positioning one or more wires in a body of the seal connection, wherein the pressure signal is transmitted to the pressure gauge via the one or more wires.

30. The method of claim 25 comprising positioning a seal diaphragm between the pressure sensor and the process media.

31. The method of claim 30 comprising preventing fill-liquid from separating the pressure sensor and the seal diaphragm.

32. The method of claim 25 wherein the pressure sensor is provided with a sensor diaphragm.

33. The method of claim 25 comprising placing the pressure sensor in direct communication with the process media.

34. The method of claim 25 wherein positioning the pressure sensor apart from the process media comprises connecting the pressure sensor to a distal end of a stem and connecting a proximal end of the stem to the process, the method further comprising positioning the pressure sensor at the proximal end of the stem.

35. The method of claim 34 wherein a cavity in a body of the stem defines the fill-liquid-free environment; and the method comprises transmitting the pressure signal through the cavity.

36. The method of claim 25 further comprising transmitting the pressure signal via one or more wires connecting the pressure gauge and the pressure sensor.

37. The method of claim 34 further comprising positioning one or more wires in a body of the stem, wherein the pressure signal is transmitted to the pressure gauge via the one or more wires.

38. A method of measuring pressure of a process media, the method comprising:

sealing a base of a seal connection to the process;

positioning a pressure gauge at a distal end of the seal connection;

positioning a pressure sensor at a base of the seal connection in operable communication with the process media;

spacing the pressure sensor apart from the pressure gauge; and

transmitting a pressure signal from the pressure sensor via transmission conduits to the pressure gauge.

39. The method of claim 34 comprising placing the pressure sensor in direct contact with the process media.

40. A process instrument for measuring pressure of process media in a process, the instrument comprising:

a pressure gauge stem comprising a proximal end for connecting to a process and a body extending from the proximal end to a distal end;

a pressure sensor located at the proximal end to sense pressure of the process media and transmit a pressure signal indicative of the sensed pressure of the process media; and

a pressure gauge positioned at the distal end of the pressure gauge stem apart from the pressure sensor and adapted to receive the pressure signal.

41. The process instrument of claim 40 comprising a transmission conduit connecting the pressure sensor to the pressure gauge, wherein the pressure signal is transmitted via the transmission conduit to the pressure gauge.

42. The process instrument of claim 41 wherein the body of the pressure gauge stem defines a cavity and the transmission conduit is located in the cavity.

43. The process instrument of claim 42 wherein the cavity is devoid of fill liquid.

44. The process instrument of claim 41 wherein the pressure signal is an electrical signal and the transmission conduit comprises one or more wires.

45. The process instrument of claim 40 wherein the interface is diaphragm-less between the sensor and the process.

46. The process instrument of claim 45 wherein the process sensor comprises a sensor diaphragm.

47. The process instrument of claim 40 wherein the pressure sensor comprises a sensor seal in direct contact with the process media.

48. The process instrument of claim 40 wherein the proximal end of the pressure gauge stem comprises a pocket and the sensor is secured in the pocket.

49. The process instrument of claim 41 wherein the gauge is a digital gauge.

50. A diagnostic instrument for measuring a parameter of process media of a process, the instrument comprising:

a stem comprising:

a proximal end for connecting to the process, and

a body extending from the proximal end to a distal end; and

a sensor located at the proximal end to sense the process media parameter and transmit a signal indicative of the sensed parameter; and

a diagnostic-output device positioned at the distal end of the stem apart from the sensor and adapted to receive the signal indicative of the sensed parameter.

51. The instrument of claim 50 wherein the body defines a cavity and the cavity is devoid of fill liquid.

52. A method of measuring pressure of a process media, the method comprising:

positioning a pressure gauge at a distal end of a gauge stem;

positioning a pressure sensor at a proximal end of the gauge stem;

spacing the pressure sensor apart from the pressure gauge;

connecting the gauge stem to a process such that the pressure sensor is in operable communication with the process media; and

transmitting a pressure signal from the pressure sensor via transmission conduits to the pressure gauge.

53. The method of claim 52 comprising placing the pressure sensor in direct contact with the process media.